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Notice of Allowability	Application No.	Applicant(s)	
	09/682,520	O'DOWD, ANTHONY JOHN	
	Examiner	Art Unit	
	Lewis A. Bullock, Jr.	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to AMENDMENT filed 10/9/07.
2. ☒ The allowed claim(s) is/are 1-3, 5-11, 13-15 now renumbered 1-13.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
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LEWIS A. BULLOCK, JR.
PRIMARY EXAMINER

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with William Lewis and David Shifren on January 2, 2008.

The application has been amended as follows:

Claim 1 (Amended) A method for tracing the execution path of a computer program comprising at least one module including a plurality of instructions, at least one of said instructions being a branch instruction, the method comprising the steps of:

instrumenting the computer program with instructions for defining the size of a predefined area of storage and instructions for outputting the contents of the storage area to a file at a predetermined period of time irrespective to the completion or non-completion of the trace;

tracing the execution path of the computer program by:

automatically identifying each branch instruction of the computer program;

evaluating each branch instruction to be one of true and false; and

responsive to an evaluation of true, automatically pushing at least one unique identifier into a said predefined area of storage, wherein said at least one unique

identifier directly references a set of instructions executed as a result of said evaluation of true;

and responsive to a determination that a plurality of unique identifiers in said predefined area of storage have been overwritten, re-instrumenting the instruction defining the size of the storage area to increase the size of the predefined area.

Claim 4 (Cancelled).

Claim 5, line 1, "4" is changed to "1".

Claim 7, line 1, "4" is changed to "1".

Claim 8, line 1, "4" is changed to "1".

Claim 9, line 1, "4" is changed to "1".

Claim 10 (Amended) The method of claim 9, further comprising the step of determining that a plurality of unique identifiers have been overwritten comprises the step of:

writing the position of the most recent unique identifier to be written out to said storage area to said storage area.

Claim 11 (Amended) The method of claim 10, further comprising the step of determining that a plurality of unique identifiers have been overwritten comprises the step of:

using said position to determine the number of unique identifiers that have been overwritten prior to be written out to said file.

Claim 12 (canceled)

Claim 13 (Amended) An apparatus stored on a computer system for tracing the execution path of a computer program comprising at least one module including a plurality of instructions, at least one of said instructions being a branch instruction, said apparatus comprising:

a compiler for instrumenting the computer program with instructions for defining the size of a predefined area of storage and instructions for outputting the contents of the storage area to a file at a predetermined period of time irrespective to the completion or non-completion of the trace; wherein said compiler traces the execution path of the computer program, and comprises of:

an identifier for automatically identifying each branch instruction of the computer program;

an evaluator for evaluating each branch instruction to be one of true and false; and

a pusher, responsive to an evaluation of true, for automatically pushing at least one unique identifier into a predefined area of storage, wherein said at least one unique identifier directly references a set of instructions executed as a result of said evaluation of true;

and an evaluator responsive to a determination that a plurality of unique identifiers in said predefined area of storage have been overwritten, re-instrumenting the instruction defining the size of the storage area to increase the size of the predefined area.

Claim 14 (Amended) A method for instrumenting a computer program comprising at least one module including a plurality of instructions, at least one of said instructions being a branch instruction, each branch instruction being evaluated to be one of true and false at run-time, with at least one signature instruction for indicating the execution path of said program at run-time, the method comprising the steps of:

automatically identifying each branch instruction;

identifying at least one set of instructions associated with an evaluation of true to the identified branch instruction at run-time;

instrumenting the computer program with instructions for defining the size of a predefined area of storage and instructions for outputting the contents of the storage area to a file at a predetermined period of time irrespective to the completion or non-completion of a trace;

instrumenting said at least one set of instructions associated with an evaluation of true with at least one signature instruction, wherein said at least one signature instruction causes at least one unique identifier to be pushed into a said predefined area of storage ~~upon execution of said true instruction~~ at run-time, and wherein said at least one unique identifier directly references said at least one set of instructions associated with an evaluation of true

re-instrumenting the instruction defining the size of the storage area to increase the size of the predefined area responsive to a determination that a plurality of unique identifiers in said predefined area of storage have been overwritten.

Claim 15 (Amended) A compiler executing on a computer system for instrumenting a computer program comprising at least one module including a plurality of instructions, at least one of said instructions being a branch instruction, each branch instruction being evaluated to be one of true and false at runtime, with at least one signature instruction for indicating the execution path of said program at run-time, said compiler comprising:

a first pusher for instrumenting the computer program with instructions for defining the size of a predefined area of storage and instructions for outputting the contents of the storage area to a file at a predetermined period of time irrespective to the completion or non-completion of a trace

a first identifier for automatically identifying each branch instruction of the computer program ;

a second identifier for identifying the instructions associated with an evaluation of true of the branch instruction at run-time;

a second pusher for instrumenting said instructions associated with an evaluation of true of the branch instruction with a signature instruction, wherein said signature instruction causes a unique identifier to be pushed into a said predefined area of storage upon ~~execution of said~~ evaluation of true to said branch instructions at run-time, and wherein said at least one unique identifier directly references said at least one instruction associated with an evaluation of true

a third pusher for re-instrumenting the instruction defining the size of the storage area to increase the size of the predefined area responsive to a determination that a plurality of unique identifiers in said predefined area of storage have been overwritten.

2. The following is an examiner's statement of reasons for allowance: The claims detail steps within tracing the execution of a program for branch instructions of: instrumenting the program for defining the area storage for the branch identifiers and readjusting said storage based on the identifiers being overwritten and instructions/operations of sending the storage contents regardless if the trace is finished or not. Newly cited U.S. Patent 6,006,033; 6,115,809; and 6,308,322 all detail tracing of a program in order to store and/or associate branch ID information as hints to the program. However, the cited prior art of record does not perform the instrumentation

and reinstrumentation of the storage area based on the overwriting of the branch identifiers or the sending of the information stored regardless if the trace is completed or not. Therefore, the claims are allowable over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571) 272-3759. The examiner can normally be reached on Monday-Friday, 8:30 a.m. - 5:00 p.m..

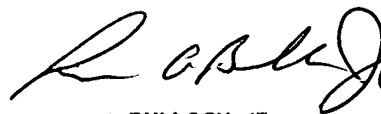
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

January 2, 2008



LEWIS A. BULLOCK, JR
PRIMARY EXAMINER